

2SK2123

Silicon N-Channel Power F-MOS

■ Features

- Avalanche energy capability guaranteed : EAS > 100mJ
- $V_{GS} = \pm 30V$ guaranteed
- High-speed switching : $t_f = 35ns$
- No secondary breakdown

■ Applications

- Non-contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching mode regulator

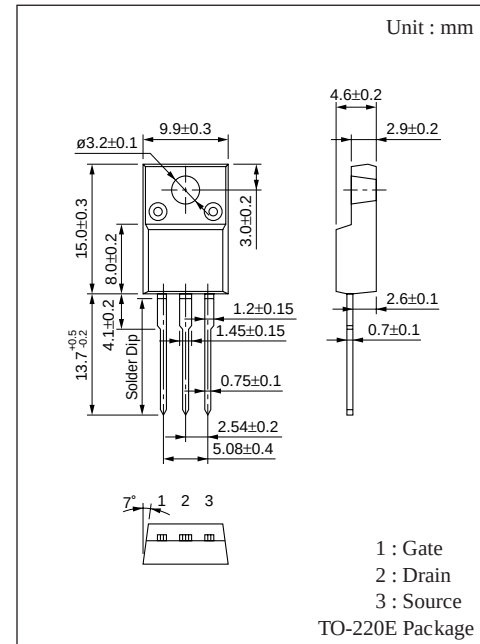
■ Absolute Maximum Ratings ($T_c = 25^\circ C$)

Parameter	Symbol	Rating	Unit
Drain-Source breakdown voltage	V_{DSS}	450	V
Gate-Source voltage	V_{GSS}	± 30	V
Drain current	DC	I_D	± 5 A
	Pulse	I_{DP}	± 15 A
Avalanche energy capability	EAS *	100	mJ
Allowable power dissipation	$T_C = 25^\circ C$	P_D	50 W
	$T_a = 25^\circ C$		2 W
Channel temperature	T_{ch}	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

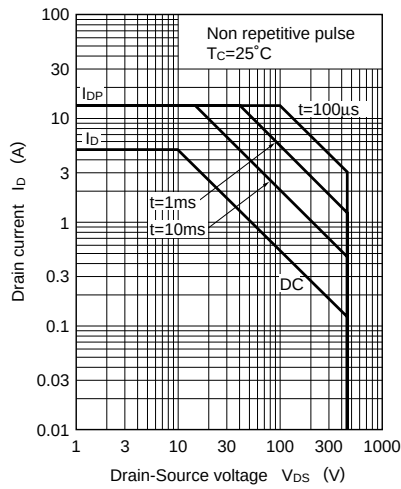
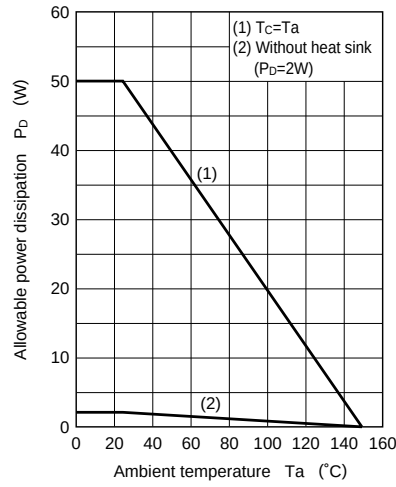
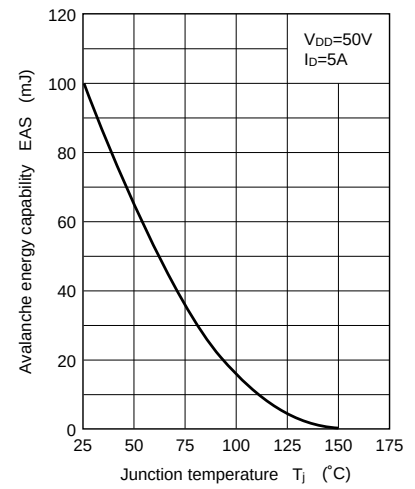
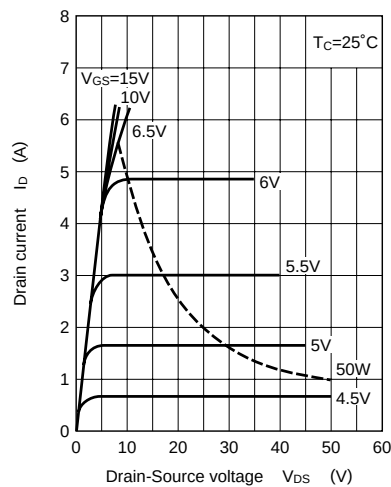
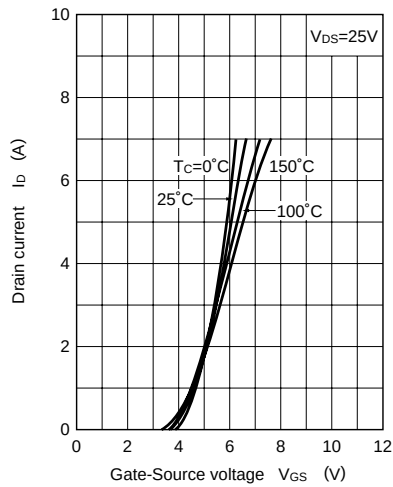
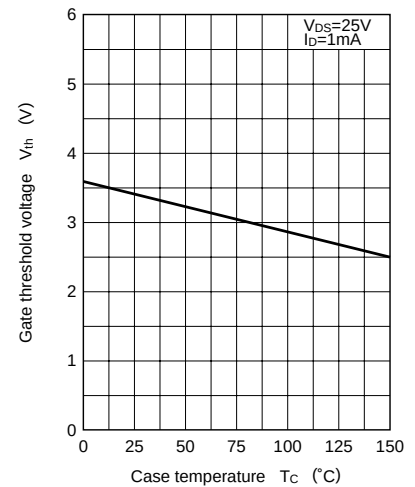
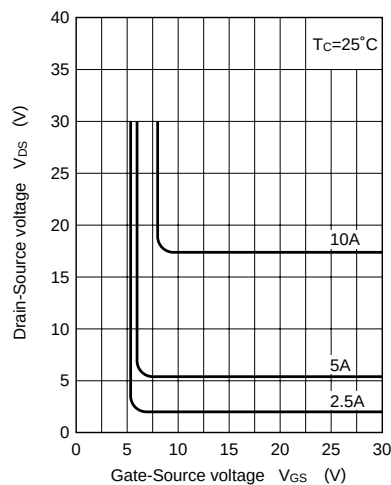
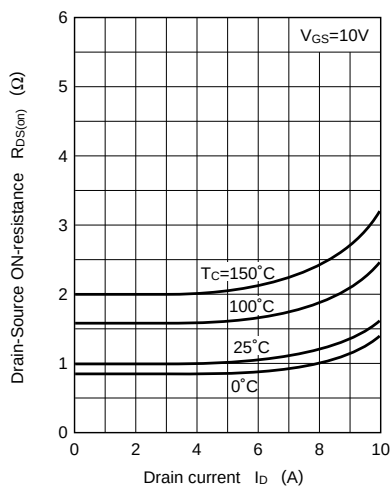
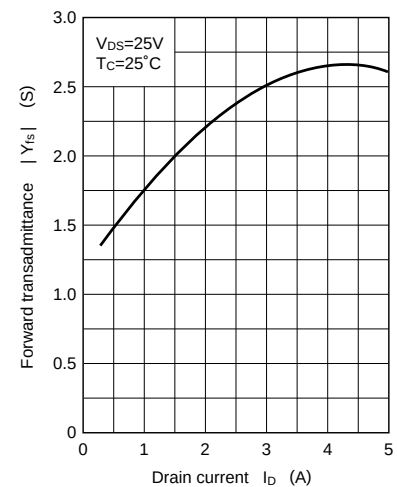
* L = 8mH, $I_L = 5A$, $V_{DD} = 50V$, 1 pulse

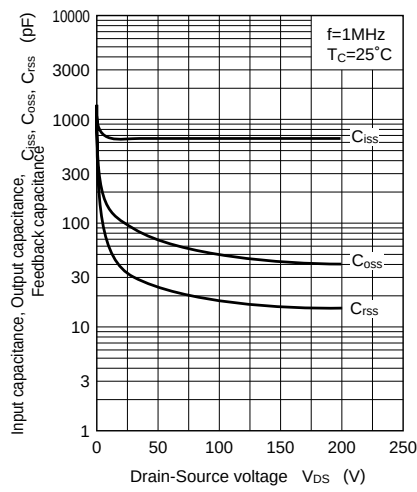
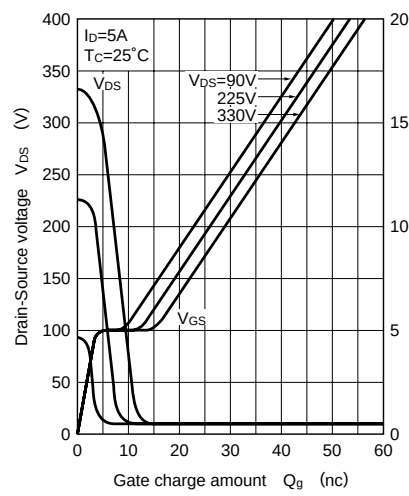
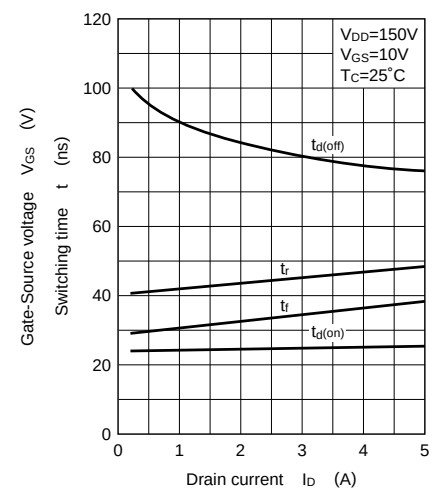
■ Electrical Characteristics ($T_c = 25^\circ C$)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	$V_{DS} = 360V$, $V_{GS} = 0$			0.1	mA
Gate-Source leakage current	I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0$			± 1	μA
Drain-Source breakdown voltage	V_{DSS}	$I_D = 1mA$, $V_{GS} = 0$	450			V
Gate threshold voltage	V_{th}	$V_{DS} = 25V$, $I_D = 1mA$	2		5	V
Drain-Source ON-resistance	$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 3A$		1	1.3	Ω
Forward transadmittance	$ Y_{fs} $	$V_{DS} = 25V$, $I_D = 3A$	2	2.5		S
Diode forward voltage	V_{DSF}	$I_{DR} = 5A$, $V_{GS} = 0$			-1.2	V
Input capacitance	C_{iss}	$V_{DS} = 20V$, $V_{GS} = 0$, $f = 1MHz$		700		pF
Output capacitance	C_{oss}			100		pF
Feedback capacitance	C_{rss}			40		pF
Turn-on time (delay time)	$t_{d(on)}$	$V_{GS} = 10V$, $I_D = 3A$ $V_{DD} = 150V$, $R_L = 50\Omega$		25		ns
Rise time	t_r			45		ns
Fall time	t_f			35		ns
Turn-off time (delay time)	$t_{d(off)}$			80		ns
Channel-Case heat resistance	$R_{th(ch-c)}$				2.5	$^\circ C/W$



Area of safe operation (ASO)

 $P_D - T_a$  $EAS - T_j$  $I_D - V_{DS}$  $I_D - V_{GS}$  $V_{th} - T_C$  $V_{DS} - V_{GS}$  $R_{DS(on)} - I_D$  $|Y_{fs}| - I_D$ 

$C_{iss}, C_{oss}, C_{rss} - V_{DS}$  $V_{DS}, V_{GS} - Q_g$  $t_{d(on)}, t_r, t_f, t_{d(off)} - I_D$  $R_{th} - t_p$ 